

ERRATA CORRIGENDUM

Title: The Fizeau Experiment: Experimental Investigations of the Relativistic Doppler Effect

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A kind reader of the *African Review of Physics* pointed out to me [RW] in an email that in our paper [1] we had used the wrong slope in Figure 10 for representing the theoretical prediction of the Special Theory of Relativity. The same error occurred in Table 1. The figure presented here shows the correct slope.

We performed an additional statistical analysis to determine the lack of fit of the theoretical equations for the Doppler theory, the Newtonian theory and the Special Theory of Relativity to the experimental data using JMP statistical software (version 10.0.2; SAS Institute Inc.). The regression equation ($FS = 0.0419v$) does not have a significant lack of fit to the data ($F = 1.1148$, $p = 0.3567$). Likewise, the Doppler theory does not have a significant lack of fit to the data ($F = 1.2447$, $p = 0.2184$). By contrast, the Newtonian theory has a significant lack of fit to the data ($F = 39.4397$, $p < 0.0001$) and the Special Theory of Relativity also has a significant lack of fit to the data ($F = 2.7864$, $p = 0.0002$). Thus while none of the theories accurately predict the experimental data, the Doppler theory is a significantly better predictor of the experimental results than the Newtonian theory or the Special Theory of Relativity.

Reference

[1] A. Maers, R. Furnas, M. Rutzke and R. Wayne, *African Review of Physics* **8**, 297 (2013).

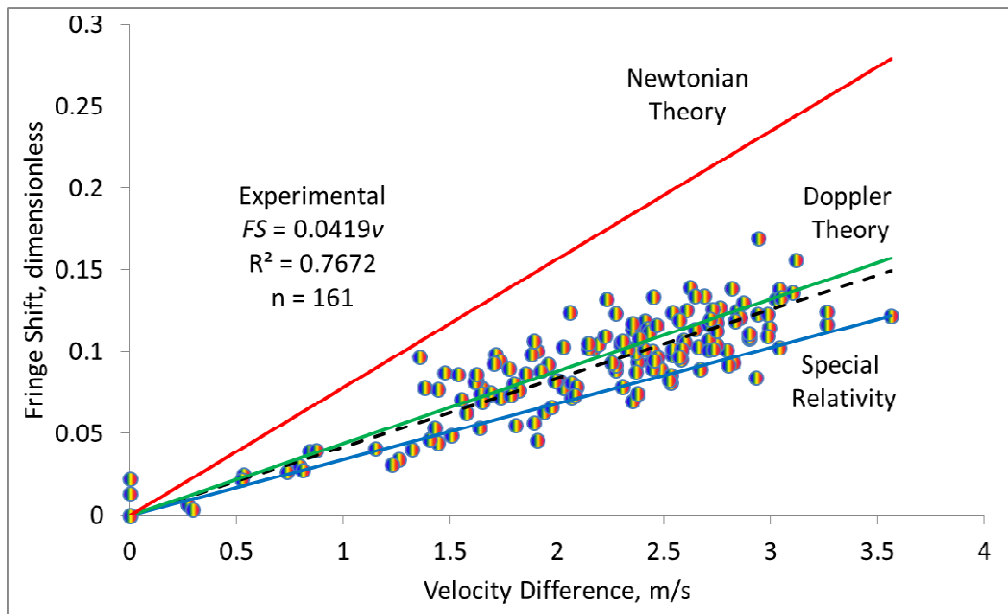


Fig.10: A graph of the fringe shift versus the measured velocity difference. The experimental data are shown as filled circles and the dashed line is the regression line for the experimental data. The blue solid line is the theoretical prediction for the Special Theory of Relativity ($FS = \frac{2Lv n^2}{\lambda c} \left(1 - \frac{1}{n^2}\right) = 0.0343$ per m/s), the green solid line is the theoretical prediction for the Doppler theory ($FS = \frac{2Lv}{\lambda c} = 0.0441$ per m/s), and the red solid line is the theoretical prediction for the Newtonian theory ($FS = \frac{2Lv n^2}{\lambda c} = 0.0784$ per m/s).